

WHAT IS CLAIMED IS:

1. A thin film magnetic memory device comprising:
  - a plurality of memory regions, arranged in a column direction, each having a plurality of memory cells arranged in a matrix, wherein each of said memory regions includes:
    - 5 a plurality of bit lines provided in correspondence with memory cell columns, respectively;
    - a first driver band arranged in a first direction of said plurality of bit lines, and supplied with power for supplying a data write current to at least one bit line among said plurality of bit lines; and
    - 10 a second driver band arranged in a second direction opposite to said first direction of said plurality of bit lines, and supplied with the power for supplying said data write current to at least one bit line among said plurality of bit lines,
  - said thin film magnetic memory device further comprises:
    - 15 a first pair of power supply line, arranged in the column direction, for supplying the power to said first driver band from said first direction; and
    - a second pair of power supply line, arranged in the column direction, for supplying the power to said second driver band from said second
    - 20 direction,
  - each of said first and second pair of power supply lines includes first and second power lines supplying a first voltage and a second voltage, respectively, and
  - 25 when data is written, the first driver band corresponding to the selected memory region selected by an externally applied address designation among said plurality of memory regions is connected to one of the first and second power lines of said first pair of power supply line in accordance with written data, and the second driver band corresponding to said selected memory region is connected to the other one of said first and
  - 30 second power lines of said second pair of power supply line in accordance with said written data.

2. The thin film magnetic memory device according to claim 1,  
wherein

said first power supply line is arranged to extend over said plurality  
of memory regions, and

5 no current path is formed in a region of each of said first and second  
pair of power supply lines, which corresponds to said selected memory  
region selected from said plurality of memory regions.

3. The thin film magnetic memory device according to claim 1,  
wherein

said data write current carried to at least one of said plurality of bit  
lines is equal in direction to said data write current carried to said first and  
5 second pair of power supply lines.

4. The thin film magnetic memory device according to claim 1,  
further comprising:

first and second power supply terminals supplied with said first  
voltage; and

5 third and fourth power supply terminals supplied with said second  
voltage, wherein

said first and third power supply terminals are arranged in said first  
direction of said first pair of power supply line, and are connected to the  
first and second power lines of said first pair of power supply line,  
10 respectively, and

said second and fourth power supply terminals are arranged in said  
second direction of said second pair of power supply line, and are connected  
to the first and second power lines of said second pair of power supply line,  
respectively.

5. The thin film magnetic memory device according to claim 1,  
wherein

said data write current carried to the bit line flows in at least one of  
said first direction and said second direction.

6. The thin film magnetic memory device according to claim 1,  
wherein

each of said memory regions is divided into a plurality of block  
regions in a row direction,

5       said first driver band is divided into a plurality of first driver units  
corresponding to said plurality of block regions in the row direction,  
respectively,

      said second driver band is divided into a plurality of second driver  
units corresponding to said plurality of block regions in the row direction,  
10       respectively,

      said first and second pair of power supply lines are further provided  
for every group block regions constituting the same column in said plurality  
of memory regions,

15       said written data includes data of a plurality of bits corresponding to  
said plurality of block regions, respectively, and

      in each of said block regions belonging to said selected memory  
region, the corresponding first driver unit is connected to one of the first  
and second power lines of said first pair of power supply line in accordance  
with the data of a corresponding bit among said plurality of bits, and the  
20       corresponding second driver unit is connected to the other one of said first  
and second power lines of said second pair of power supply line in  
accordance with the data of said corresponding bit among said plurality of  
bits.

7. The thin film magnetic memory device according to claim 6,  
wherein

5       each said first pair of power supply line further includes a first sub-  
power supply line arranged in a direction in which the first sub-power  
supply line intersects with said first and second power lines, and provided  
for each of the first driver units corresponding to each of said block regions,

      each said second pair of power supply line further includes a second  
sub-power supply line arranged in a direction in which the second sub-  
power supply line intersects with said first and second power lines, and

10 provided for each of the second driver units corresponding to each of said block regions,

in each of said block regions belonging to said selected region, said corresponding first driver unit is connected to one of said first and second power lines through said first sub-power supply line corresponding to said  
15 each first driver unit, and

said corresponding second driver unit is connected to the other one of said first and second power lines through said second sub-power supply line corresponding to said each second driver unit.

8. A thin film magnetic memory device comprising:

a plurality of memory regions, arranged in a column direction, each having a plurality of memory cells arranged in a matrix, wherein

each of said memory regions includes:

5 a plurality of bit lines provided in correspondence with memory cell columns, respectively;

a first driver band arranged in a first direction of said plurality of bit lines, and supplied with power for supplying a data write current to at least one bit line among said plurality of bit lines; and

10 a second driver band arranged in a second direction opposite to said first direction of said plurality of bit lines, and supplied with the power for supplying said data write current to at least one bit line among said plurality of bit lines,

said thin film magnetic memory device further comprises:

15 a first power supply line, arranged in correspondence with said first driver band along the column direction, for supplying a first voltage from said first direction; and

a second power supply line, arranged in correspondence with said second driver band along the column direction, for supplying a second  
20 voltage from said second direction,

when data is written, one of the first and second driver bands corresponding to the selected memory region selected from said plurality of memory regions in accordance with written data is connected to one of the

25 corresponding first and second power supply lines, and the other one of said corresponding first and second driver bands is electrically connected to the second voltage.

9. A thin film magnetic memory device comprising:  
a plurality of memory regions, arranged in a row direction, each having a plurality of memory cells arranged in a matrix, wherein each of said memory regions includes:  
5 a plurality of digit lines provided in correspondence with memory cell rows, respectively; and  
a digit line driver band arranged in a first direction of said plurality of digit lines, and supplied with a first voltage for supplying a data write current to at least one digit line selected from said plurality of digit lines,  
10 said first direction and said second direction opposite to said first direction of each of said digit lines are electrically coupled to a second voltage, and  
said thin film magnetic memory device further comprises a first power supply line, electrically coupled to said digit line driver band in the  
15 row direction, for supplying said first voltage from said first direction.

10. The thin film magnetic memory device according to claim 9, further comprising:  
a second power supply line supplying said second voltage from said second direction, wherein  
5 in each of said memory regions, said plurality of digit lines in said second direction are electrically coupled to said second power supply line.